08-25-04

AF/2645
IZW

TRANSMITTAL OF APPEAL BRIEF

Docket No.
47524/P102US/09901295

In re Application of: Michael J. Polcyn

Application No.	Filing Date	Examiner	Group Art Unit
09/689,481-Conf. #7741	October 12, 2000	M. S. Elahee	2645

Invention: RESOURCE MANAGEMENT UTILIZING QUANTIFIED RESOURCE ATTRIBUTES

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: August 9, 2004 .

The fee for filing this Appeal Brief is 330.00 .

[x] Large Entity [ ] Small Entity

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This sheet is submitted in duplicate.

Dated: August 24, 2004

Jody C. Bishop
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Appeal Brief Transmittal

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 482737396US, in an envelope addressed to: MS Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: August 24, 2004 Signature: Gail Miller (Gail Miller)

PTO/SB/17 (10-03)
Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 330.00

Complete if Known	
Application Number	09/689,481-Conf. #7741
Filing Date	October 12, 2000
First Named Inventor	Michael J. Polcyn
Examiner Name	M. S. Elahee
Art Unit	2645
Attorney Docket No.	47524/P102US/09901295

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number: 06-2380

Deposit Account Name: Fulbright & Jaworski L.L.P.

The Director is authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☒ Credit any overpayments

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($) 0.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below		Fee Paid
Total Claims		-79** =		x		=	
Independent Claims		-7** =		x		=	
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0.00

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge – late filing fee or oath	
1052	50	2052	25	Surcharge – late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive – unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
Other fee (specify)					

*Reduced by Basic Filing Fee Paid **SUBTOTAL (3)** ($) 330.00

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	Jody C. Bishop	*Registration No. (Attorney/Agent)*	44,034	*Telephone*	(214) 855-8007
Signature				*Date*	August 24, 2004

Fee Transmittal

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 482737396US, in an envelope addressed to: M/S Appeal Brief - Patents Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: August 24, 2004 Signature: Gail Miller (Gail Miller)

Docket No.: 47524/P102US/09901295
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Michael J. Polcyn

Application No.: 09/689,481 Confirmation No.: 7741

Filed: October 12, 2000 Art Unit: 2645

For: RESOURCE MANAGEMENT UTILIZING QUANTIFIED RESOURCE ATTRIBUTES Examiner: M. S. Elahee

APPELLANT'S BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on August 9, 2004.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

This brief contains items under the following headings as required by 37 C.F.R. § 1.192 and M.P.E.P. § 1206:

I. Real Party In Interest
II Related Appeals and Interferences
III. Status of Claims
IV. Status of Amendments

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

InterVoice Limited Partnership, a limited partnership having its principal place of business in Reno, Nevada, who stands as assignee of the present patent application, and Intervoice, Inc., a Delaware corporation having its principal place of business in Dallas, Texas, who stands as licensee of the present patent application.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 77 claims pending in application, numbered 1-31, 33, 35-67 and 72-85.

B. Current Status of Claims

1. Claims canceled: 32, 34, 56, 58, 68-71
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1-31, 33, 35-67 and 72-85
4. Claims allowed: None
5. Claims rejected: 1-31, 33, 35-67 and 72-85

C. Claims On Appeal

The claims on appeal are claims 1-31, 33, 35-67 and 72-85.

IV. STATUS OF AMENDMENTS

Responsive to a Final Office Action mailed April 16, 2004, Applicant filed an Amendment After Final Rejection on June 16, 2004. The Examiner responded to the Amendment After Final Rejection in an Advisory Action mailed July 14, 2004. In the Advisory Action, the Examiner indicated that Applicant's amendments presented in the Amendment After Final Rejection would not be entered. Accordingly, the claims enclosed herein as Appendix A do not incorporate the amendments to claims 1, 19, 36, 57, 59, and 60 presented in the Amendment After Final Rejection.

V. SUMMARY OF INVENTION

Resource management schemes are utilized for many types of systems in order to manage allocation of a limited number of resources to service requests for such resources. For example, resource management schemes may be utilized in allocating agents within a telephony call center to service telephone callers, allocating network or computer resources, such as memory and/or processing resources to requesting applications, or even allocating a limited number of tools within a toolbox to mechanics requesting such tools. All resources available within such a system typically do not have uniform attributes (or skill sets). For example, agents within in a telephony call center typically do not have uniform skill sets. For instance, each agent's knowledge of the products being serviced by the call center, sales skills, problem-solving skills, language skills, as well as many other quantifiable skills/attributes, vary from other agents. *See* page 2, lines 1-11 of the present application.

Traditional resource management techniques do not attempt to quantify attributes of such resources beyond mere binary quantification. Rather, resources are traditionally identified in binary fashion as to various attributes. More specifically, resources are typically identified as either: a) possessing a particular attribute or b) not possessing such attribute. For example, an agent in a call center is traditionally identified as either possessing the ability to speak a particular language (e.g., English) or not, rather than quantifying this language-speaking skill in manner more than mere binary. *See* page 2, lines 12-15 of the present application.

Embodiments of the present invention provide a system and method for quantifying one or more attributes of a finite number of resources for effective management of such

resources. As used with reference to the present invention, "quantifying" resource skills/attributes is intended to mean any type of quantification of resources beyond mere binary quantification described above. *See* Page 15, lines 7-9 of the present application. For instance, attributes of resources may be quantified along a scale, such as a scale of 0 to 100. In this regard, the degree of capability possessed by an agent can be more fully detailed, as opposed to merely pigeon-holing an agent as either possessing a particular skill or not (as with traditional binary quantification techniques).

Thus, a resource management scheme is provided for managing a finite number of resources for servicing requests, in which at least one attribute of such resources is quantified. At least one request for service by one or more of the resources is received, and at least one attribute desired by the request is quantified. Thus, not only are the attributes possessed by resources quantified in more than a mere binary fashion, the attribute(s) desired by a received request are also so quantified. Based at least in part on the quantified attributes of the resources and the quantified attributes desired by the received request, at least one suitable resource for servicing the received request is determined. *See* page 6, lines 1-11 of the present application.

In one embodiment, the resource management scheme of the present invention is implemented within a telephony call center. For example, such a resource management scheme may be utilized to manage agents within a call center to allow for effective service to callers received by the call center. However, the resource management scheme of the present invention may be implemented within any type of environment to manage any type of finite resources in a manner for effectively servicing received requests. As one example, the resource management scheme of the present invention may be implemented within a computer system to manage computer resources, such as data input resources, data output resources, data storage resources, and data processing resources. *See* page 6, lines 12-20 of the present application.

In an example implementation in a telephony call center, an agent's ability to speak English may be quantified along a scale of 0 to 100, with 0 indicating no English skills and 100 indicating fluent English skills. Further attributes may be quantified in a similar manner. For instance, additional language skills, such as the ability to speak Spanish, French, and German, may each be quantified along a scale for an agent. A request for service from a

resource may be received, and the attribute(s) of a resource desired by the request are quantified. Accordingly, a received request may be quantified along a scale of 0 to 100, for example, according to the attributes of a resource desired by the request. Suitable resources for servicing a request may be determined by evaluating the quantified attributes possessed by the resources and the quantified attributes desired by the request. For instance, assuming a caller desires to be serviced by an agent possessing fluent English skills, then the desired attribute may be quantified at or near 100 on the above-mentioned scale. Further, a caller willing to be serviced by an agent possessing less than fluent English skills, may have its desired quantified at, say 70 on the above-mentioned scale. The quantified attributes of the call centers agents may be compared with the quantified attributes desired by a caller in order to determine a suitable agent for servicing the received caller. For instance, continuing with the above example, a greater number of agents may have English-speaking skills quantified at 70 or greater than the number of agents possessing fluent English skills, which may enable faster service of the caller willing to accept an agent capable of speaking less than fluent English. *See* page 6, line 21 – page 7, line 7 of the present application.

In certain embodiments, "N" number of attributes of a resource may be quantified and plotted within an N-dimensional space. Additionally, attributes desired by a received request may be quantified and plotted within such N-dimensional space. The distance between the quantified "N" number of attributes of the resources and the quantified attributes desired by the received request may be calculated to determine at least one suitable resource for servicing the request. For example, resources plotted within a particular distance from the plotted request may be determined as suitable for servicing the request. For illustrative purposes, suppose the resource management scheme is implemented within a telephony call center to manage agents to effectively service callers to the telephony call center. The English language skills of each agent may be quantified along a scale of 0 to 100, for example, with 0 indicating no English skills and 100 indicating fluent English skills. Additionally, knowledge of various products possessed by each agent may be similarly quantified. For instance, knowledge of products A, B, and C may be quantified for each agent along a scale of 0 to 100, with 0 indicating no knowledge of the product and 100 indicating great knowledge of the product. Thus, based on the quantifiable values of each attribute possessed by the agents (i.e., the English language skills, and knowledge of products A, B and C), each agent may be plotted within a hypothetical four-dimensional skill space. A

request may then be received from a caller to the call center desiring to speak with an agent fluent in English and possessing great knowledge of product B, for example. Such a request may be plotted within the N-dimensional space based on the desired attributes of an agent for servicing the request. In one embodiment, resources plotted most closely to the plotted request may be allocated for servicing the request. *See* page 7, line 8 – page 8, line 2 of the present application.

VI. ISSUES

The issues remaining are:

A. Whether claims 1-15, 17, 19-31, 36-40, 42-56, 58, 60, 62-67, 72-76, 78, and 80-85 are anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 6,044,355 issued to Crockett et al. (hereinafter "*Crockett*");

B. Whether claims 16, 18, 33, 35, 41, 57, 59, 77, and 79 are unpatentable under 35 U.S.C. § 103(a) over *Crockett* in view of U.S. Patent No. 5,572,625 issued to Raman et al. (hereinafter "*Raman*"); and

C. Whether claims 41 and 61 are unpatentable under 35 U.S.C. § 103(a) over *Crockett* in view of U.S. Patent No. 6,044,355 issued to McPartlan et al. (hereinafter "*McPartlan*").

VII. GROUPING OF CLAIMS

For purposes of this appeal brief only, and without conceding the teachings of any prior art reference, the claims have been grouped as indicated below:

Group Claim(s)
I. Claims 1-3, 6-7, and 11-15;
II. Claims 4-5;
III. Claims 8-9;
IV. Claim 10;
V. Claim 17;
VI. Claim 80;
VII. Claim 81;
VIII. Claim 82;
IX. Claims 19-21, 24-25, and 29-31;
X. Claims 22-23;

XI. Claims 26-27;
XII. Claim 28;
XIII. Claim 83;
XIV. Claim 84;
XV. Claim 85;
XVI. Claims 36-40, 42, 45, 48, and 52-56;
XVII. Claims 46-47;
XVIII. Claims 49-50;
XIX. Claim 51;
XX. Claim 58;
XXI. Claims 60, 62-65, and 72-76;
XXII. Claims 66-67;
XXIII. Claim 78;
XXIV. Claims 16, 33, 35, 57, and 77;
XXV. Claims 18, 59, and 79; and
XXVI. Claims 41 and 61.

In Section VIII below, Applicant has included arguments supporting the separate patentability of each claim group as required by M.P.E.P. § 1206.

VIII. ARGUMENTS

A. Rejections Under 35 U.S.C. § 102(b) over *Crockett*

Claims 1-15, 17, 19-31, 36-40, 42-56, 58, 60, 62-67, 72-76, 78, and 80-85 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Crockett*. To anticipate a claim under 35 U.S.C. § 102, a single reference must teach every element of the claim, *see* M.P.E.P. § 2131. As discussed further below, *Crockett* does not teach every element of the rejected claims, and therefore fails to anticipate such claims under § 102(b).

Definition of Quantifying

As an initial matter, Applicant believes that the rejection of claims 1-15, 17, 19-31, 36-40, 42-56, 58, 60, 62-67, 72-76, 78, and 80-85 as being anticipated by *Crockett* arises because the Examiner either fails to understand or refuses to recognize the definition that Applicant has expressly provided for the term "quantifying". The specification of the present application provides: "[a]s used with reference to the present invention herein, 'quantifying' resource skills/attributes is intended to mean any type of quantification of resources beyond mere binary quantification described above" (emphasis added). Page 15, lines 7-9. Applicant respectfully reminds the Examiner that Applicant may be his own lexicographer,

Lear Siegler, Inc. v. Aerogrip Corp., 221 U.S.P.Q. 1025, 1031 (Fed. Cir. 1984). "When the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art." M.P.E.P. § 2173.05(a)(I), citing *In re Zletz*, 893 F.2d 319, 13 U.S.P.Q.2d 1320 (Fed. Cir. 1989).

Applicant respectfully noted the above definition in Applicant's response (mailed December 23, 2003) to the first Office Action in which the Examiner applied *Crockett* (i.e., the Office Action mailed September 23, 2003), *see* page 15 of Applicant's response. In response to Applicant's response of December 23, 2003, the Final Office Action (mailed April 16, 2004) provided on page 2 thereof:

> Furthermore, the Applicant also argues on page 15, lines 24, 25 that 'quantification of attribute(s) of resources desired by a request, beyond mere binary quantification, is not taught by Crockett'. The examiner disagrees with this argument. Because, the applicant is silent about the phrase 'beyond mere binary quantification' in the claimed limitation of claim 1.

Thus, the Final Office Action ignored the definition of "quantifying" presented in the present application because the definition "beyond mere binary quantification" is not expressly recited in claim 1. However, because Applicant had expressly defined the term "quantifying" in the specification of the present application (at page 15, lines 7-9) "to mean any type of quantification of resources beyond mere binary quantification" (emphasis added), this term of claim 1 should be interpreted consistent with Applicant's express definition even without that definition being repeated in the claim, in accordance with M.P.E.P. § 2173.05(a)(I).

In attempt to advance prosecution of the present application, Applicant's attorney conducted a telephonic interview with the Examiner on June 15, 2004, in which Applicant's attorney proposed adding language to certain ones of the claims to expressly recite what is implicit from Applicant's definition of "quantifying" (e.g., to expressly recite in the claims that quantifying is "beyond mere binary quantification"). Applicant's attorney understood that an agreement was reached whereby the clarifying language could be added to the claims without raising new issues. However, Applicant's attorney apparently misunderstood, as the Advisory Action mailed July 14, 2004 indicated that Applicant's amendments would not be entered as they raised new issues.

Thus, although Applicant initially defined the term "quantifying" in the specification of the present application as meaning "any type of quantification of resources beyond mere binary quantification" (emphasis added), and Applicant expressly argued this definition in its Amendment of December 23, 2003, and Applicant has attempted to amend the claims to expressly recite this definition, the Examiner has refused to accept the definition advanced by Applicant. Again, Applicant respectfully notes that "When the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art." M.P.E.P. § 2173.05(a)(I), citing *In re Zletz*, 893 F.2d 319, 13 U.S.P.Q.2d 1320 (Fed. Cir. 1989).

Even though the amendments presented by Applicant in its Amendment After Final of June 16, 2004 have not been entered, Applicant maintains that those amendments are not needed as the term "quantifying" implicitly has a meaning consistent with those amendments in view of the express definition provided by Applicant in the specification. That is, Applicant reasserts that in view of the express definition set forth in Applicant's specification, the term "quantifying" in the claims is properly interpreted to mean "any type of quantification of resources beyond mere binary quantification" (emphasis added).

As discussed further below, when the express definition assigned by Applicant to the term "quantifying" is not ignored, claims 1-15, 17, 19-31, 36-40, 42-56, 58, 60, 62-67, 72-76, 78, and 80-85 are not anticipated by *Crockett*.

i. Independent Claim 1

Independent claim 1 recites, in part:

> quantifying at least one attribute of said resources;
> receiving at least one request for at least one of said resources;
> quantifying at least one attribute desired by said at least one request;
> and
> based at least in part on said quantifying steps, determining at least one suitable resource for servicing said at least one request.

Crockett fails to teach at least the above elements of independent claim 1. First, *Crockett* fails to teach "quantifying at least one attribute desired by said at least one request," as recited by claim 1. As discussed above, the specification of the present application

provides: "[a]s used with reference to the present invention herein, 'quantifying' resource skills/attributes is intended to mean any type of quantification of resources beyond mere binary quantification described above" (emphasis added). Page 15, lines 7-9. Thus, when interpreted properly in view of the express definition provided by Applicant, this element of claim 1 effectively recites quantifying at least one attribute desired by said at least one request beyond mere binary quantification. *Crockett* fails to teach quantifying, beyond mere binary quantification, at least one attribute desired by a received request.

Crockett instead teaches that calls are classified by type, as taught at Col. 5, lines 18-22: "It is further assumed that calls arriving at the call center may be classified according to so-called 'call types' based on a dialed number and (possibly) other information, such as the calling number or some caller response to network prompts." *Crockett* does not teach that "classification" can be more than mere binary quantification, but rather teaches that a call either conforms to a call type or does not conform. Thus, according to *Crockett*, the attributes desired by a caller are quantified in a mere binary fashion.

Crockett teaches at column 2, lines 14-22:

> In a skills-based routing environment, on the contrary, the "matching" of calls to agents by the ACD becomes more sophisticated and thus complicated. Agents who have more than one skill no longer "belong" to a well-defined team that handles a restricted set of calls. Instead, the skills definitions form "implicit" teams that overlap in complex ways. If, for example, a call center has 10 skills defined, then agents could in principle have any of 1024 possible combinations (2^{10}) of those skills.

Thus, the above portion of *Crockett* teaches that in a skills-based environment a binary quantification is made to reflect whether an agent possesses each of a given number of different skills (e.g., 10 different skills in the above example of *Crockett*). This is analogous to the example prior art scheme shown in FIGURE 3 of the present application, wherein each of agents $Agent_A$, $Agent_B$, and $Agent_C$ are specified as either possessing or not possessing (binary quantification) each of English, Spanish, and French language skills.

Thus, *Crockett* does not teach quantifying at least one attribute desired by said at least one request beyond mere binary quantification. That is, *Crockett* does not teach quantifying an attribute desired by a received caller beyond mere binary quantification. Rather, callers are classified into call types in which any attribute desired by a given call type is quantified in

a mere binary fashion. However, *Crockett* addresses determining proper work schedules for the agents of a call center, and while *Crockett* does not teach quantifying at least one attribute desired by a received request beyond mere binary quantification, *Crockett* mentions that the agents attributes/skills may be quantified to a greater degree for determining a proper work schedule. For instance, *Crockett* recites at Col. 5, lines 12-28:

> Skills designations may be further qualified, for example, as "primary" or "secondary" skills, or with some other designation of skill priority or degree of skill attainment. In the preferred embodiment, skill priorities are included when organizing agents into skill groups; in a particular skill group, all agents have the same skills at the same priority levels. It is further assumed that calls arriving at the call center may be classified according to so-called "call types" based on a dialed number and (possibly) other information, such as the calling number or some caller response to network prompts. In the paradigm of the present invention, each agent has one or more identified skills that make the agent available to handle particular call types. The principal goal of the invention is to create a work schedule for that agent (and other agents scheduled to work at the same time during a given scheduling interval) that maximizes the quality of service offered by the call center while making efficient use of call center resources.

The above-recited passage from *Crockett* teaches that the degree of skill or skill priorities of an agent may be used to create a work schedule for the agent by grouping the agent into a skill group with other agents who have the same skill level. That work schedule then allows more efficient use of call resources (e.g., to assure proper skill coverage over a given work shift). However, this passage only teaches that an agent's skill degree may be qualified or prioritized for scheduling the times for each agent to work. The passage does not teach that the same qualification or prioritization is applied to calls as they are classified according to call type. Thus, *Crockett* fails to teach, at least, "quantifying at least one attribute desired by said at least one request" beyond mere binary quantification, as recited by claim 1.

It should be recognized that claim 1 not only recites "quantifying at least one attribute of said resources", but recites "quantifying at least one attribute desired by said at least one request" (emphasis added). In quantifying an agent's skill degree for scheduling the times for each agent to work, *Crockett* does not address quantifying at least one attribute desired by a received request. Therefore, *Crockett* does not teach each and every limitation of claim 1.

Further, *Crockett* does not teach, "based at least in part on the quantifying steps, determining at least one suitable resource for servicing said at least one request", as recited by claim 1. The agents' skill levels are considered in *Crockett* for scheduling work times for the agents, but quantification of the agent's skills beyond mere binary quantification is not considered in determining an agent (that is at work) for servicing a received caller. Instead, *Crockett* teaches a mere binary quantification in determining an agent to service a received call. For instance, if a caller desires an agent capable of speaking English, the agents are quantified as either capable of speaking English or not (binary quantification) in determining an agent for servicing the caller. *Crockett* does not consider a quantification of an agent's English-speaking capability, for example, beyond mere binary (i.e., beyond determining that the agent either possesses such capability or not) in determining an appropriate agent for servicing a received caller.

In view of the above, *Crockett* fails to teach every element of independent claim 1, and therefore does not anticipate claim 1 under 35 U.S.C. § 102(b). Claims 2-15, 17, and 80-82 each depend either directly or indirectly from independent claim 1 and, thus, inherit all of the limitations of independent claim 1. Thus, *Crockett* does not teach or suggest all claim limitations of claims 2-15, 17, and 80-82. It is respectfully submitted that dependent claims 2-15, 17, and 80-82 are allowable at least because of their dependence from claim 1 for the reasons discussed above. This argument applies to the claims of Groups I-VIII identified above.

ii. Independent Claim 19

Independent claim 19 recites, in part:

> quantifying at least one functional attribute of said resources, wherein said quantifying said at least one functional attribute of said resources includes grading said at least one functional attribute of each of said resources along a scale;
>
> receiving at least one request for said at least one functional attribute;
>
> quantifying said at least one functional attribute desired by said at least one request, wherein said quantifying said at least one functional attribute desired by said at least one request includes grading said at least one functional attribute of each of said resources along a scale; and
>
> based at least in part on said quantifying steps, determining at least one suitable resource for servicing said at least one request.

Crockett does not teach, at least, the above-recited feature of claim 19. For instance, *Crockett* does not teach "quantifying said at least one functional attribute desired by said at least one request, wherein said quantifying said at least one functional attribute desired by said at least one request includes grading said at least one functional attribute of each of said resources along a scale". Again, "quantifying" is defined by the present application to mean more than mere binary quantification. *Crockett* does not grade at least one functional attribute desired by at least one request along a scale in a manner that quantifies the at least one functional attribute beyond mere binary quantification.

Crockett teaches qualifying a caller as one or more predetermined call types. See again Col. 5, lines 18-22. As mentioned above with regard to claim 1, classifying a caller as a call type as performed by the *Crockett* system is, at most, mere binary quantification and, thus, does not quantify the functional attributes desired by a received request beyond more than mere binary quantification.

Further, *Crockett* does not teach "based at least in part on said quantifying steps, determining at least one suitable resource for servicing said at least one request", as recited by claim 19. The agents' skill levels are considered in *Crockett* for scheduling work times for the agents, but quantification of the agent's skills beyond mere binary quantification is not considered in determining an agent (that is at work) for servicing a received caller. Instead, *Crockett* teaches a mere binary quantification in determining an agent to service a received call. For instance, if a caller desires an agent capable of speaking English, the agents are quantified as either capable of speaking English or not (binary quantification) in determining an agent for servicing the caller. *Crockett* does not consider a quantification of an agent's English-speaking capability, for example, beyond mere binary (i.e., beyond determining that the agent either possesses such capability or not) in determining an appropriate agent for servicing a received caller.

It should be recognized that claim 19 not only recites "quantifying at least one functional attribute of said resources", but recites "quantifying said at least one functional attribute desired by said at least one request" (emphasis added). In quantifying an agent's skill degree for scheduling the times for each agent to work, *Crockett* does not address quantifying at least one functional attribute desired by a received request. Therefore, *Crockett* does not teach each and every limitation of claim 19.

In view of the above, *Crockett* fails to teach every element of independent claim 19, and therefore does not anticipate claim 19 under 35 U.S.C. § 102(b). Claims 20-31 and 83-85 each depend either directly or indirectly from independent claim 19 and, thus, inherit all of the limitations of independent claim 19. Thus, *Crockett* does not teach or suggest all claim limitations of claims 20-31 and 83-85. It is respectfully submitted that dependent claims 20-31 and 83-85 are allowable at least because of their dependence from claim 19 for the reasons discussed above. This argument applies to the claims of Groups IX-XV identified above.

iii. Independent Claim 36

Independent claim 36 recites, in part:

> means for gradationally quantifying at least one attribute of said resources;
> means for receiving at least one request for at least one of said resources;
> means for gradationally quantifying at least one attribute desired by said at least one request; and
> means for determining at least one suitable resource for servicing said at least one request based at least in part on said at least one quantified attribute of said resources and said at least one quantified attribute desired by said at least one request, wherein said means for determining computes a difference between the quantified at least one attribute of said resources and the quantified at least one attribute desired by said at least one request to identify at least one of said resources that is suitable for servicing said at least one request.

As described above with claims 1 and 19, *Crockett* does not teach "quantifying at least one attribute desired by said at least one request" nor does *Crockett* teach "determining at least one suitable resource for servicing said at least one request based at least in part on said at least one quantified attribute of said resources and said at least one quantified attribute desired by said at least one request", considering that "quantifying" is defined by the present specification to mean more than mere binary quantification.

Further, *Crockett* fails to teach "wherein said means for determining computes a difference between the quantified at least one attribute of said resources and the quantified at least one attribute desired by said at least one request to identify at least one of said resources that is suitable for servicing said at least one request" as recited by claim 36. *Crockett* simply does not teach a means for determining at least one suitable resource for servicing a received

request, wherein the means for determining computes a difference between a quantified attribute of the resources and a quantified attribute desired by the received request to identify at least one of the resources that is suitable for servicing the received request.

The Final Office Action asserts "Crockett does teach the means for determining computes a difference between the particular skill group (i.e., quantified at least one attribute) of the agents (i.e., resources) and the particular skill group (i.e., quantified at least one attribute) desired by the at least one call type (i.e., request) to identify at least one of the agents (i.e., resources) that is suitable for servicing the at least one request (fig. 1, fig. 2; col. 5, lines 10-28, 35-38, 46-51, col. 8, lines 17-37, 65-67, col. 9, lines 1-13)." However, while this rejection cites to several portions of *Crockett*, none of the relied upon portions actually teach this element of claim 36, as discussed further below.

Figure 1 of *Crockett* is "a flowchart of the preferred method of the invention for generating an optimum schedule for a plurality of scheduled agents in a telephone call center", col. 4, lines 18-20. Such Figure 1 of *Crockett* does not show any operation computing a difference between a quantified attribute of a resource and a quantified attribute desired by a received request.

Figure 2 of *Crockett* is "a block diagram of the skills-based system modeling infrastructure of the present invention", col. 4, lines 21-22. Such Figure 2 of *Crockett* does not show any operation computing a difference between a quantified attribute of a resource and a quantified attribute desired by a received request.

Col. 5, lines 10-28, 35-38, and 46-51 of *Crockett* provide:

> According to the present invention, each of a plurality of agents to be scheduled in the call center has a combination of defined "skills." One or more agents are then organized into "skill groups," each including all scheduled agents having a particular sub-combination of skills. Thus, for example, agents in skill group A have skills 1, 2 and 3, wherein agents in skill group B have skills 2, 3 and 5, for instance. Skills designations may be further qualified, for example, as "primary" or "secondary" skills, or with some other designation of skill priority or degree of skill attainment. In the preferred embodiment, skill priorities are included when organizing agents into skill groups; in a particular skill group, all agents have the same skills at the same priority levels. It is further assumed that calls arriving at the call center may be classified according to so-called "call types" based on a dialed number and (possibly)

other information, such as the calling number or some caller response to network prompts. In the paradigm of the present invention, each agent has one or more identified skills that make the agent available to handle particular call types. The principal goal of the invention is to create a work schedule for that agent (and other agents scheduled to work at the same time during a given scheduling interval) that maximizes the quality of service offered by the call center while making efficient use of call center resources.

To this end, the present invention provides a method by which a series of call handling simulations are run to generate incremental or "interim" schedules that, through a feedback mechanism, progress toward some "optimum" scheduling solution for the call center. A preferred technique for accomplishing this result is now described. A flowchart describing the preferred technique is shown in FIG. 1. It should be appreciated that these method steps are preferably implemented in a computer. A representative computer is a personal computer or workstation platform that is Intel x86-, PowerPC.RTM.- or RISC.RTM.-based, and includes an operating system such as Windows '95, Windows.RTM. NT, IBM.RTM. OS/2.RTM., IBM AIX.RTM., Unix or the like. Such machines include a known display interface (a graphical user display interface or "GUI") and associated input devices (e.g., keyboard, mouse, etc.).

The method begins at step 10 to generate a "net staff" array for each call type. The net staff array is generally a one-dimensional array (for each call type) that contains "difference" values generated (at least initially) using call volume forecasts and Erlang processing, all in a known manner. (col. 5, lines 5-51).

The above teaching of *Crockett* does not disclose computing a difference between a quantified attribute of a resource and a quantified attribute desired by a received request to identify at least one of said resources that is suitable for servicing the received request. Indeed, the above portion of *Crockett* does not address identifying a resource (e.g., agent) for servicing a received request (e.g., call) at all, but rather addresses determining an appropriate staffing of agents for a call center. For instance, the above portion of *Crockett* mentions that a "difference" is contained in the "net staff array". *Crockett* further explains "Thus, the net staff array contains values representing the difference between a currently-scheduled staff and an amount of staff needed to handle the call type during the interval, in other words, a current estimate of the difference between the staffing level provided in the current schedule and the staffing level needed to meet current call handling requirements." Col. 5, lines 59-65. Accordingly, the difference contained in the net staff array of *Crockett* is not computed based on a quantified attribute desired by a received request. And, such difference contained in the

net staff array of *Crockett* is used to identify at least one of said resources that is suitable for servicing a received request.

While the net staff array may provide an indication of how much additional staff possessing skills for servicing a particular call type should be added to the call center's work schedule for a given interval (e.g., shift), the net staff array is not used for identifying a suitable resource for servicing a received request. The relied upon portion of *Crockett* is focused on a much different situation. It is focused on scheduling agents to work in a call center over a given time interval (e.g., shift), rather than addressing the assignment of a proper agent (that is at work) to a received caller. As discussed above with claims 1 and 19, the determination of which agent to be assigned for servicing a received call in *Crockett* is made purely based on a binary quantification.

The Final Office Action further cites col. 8, lines 17-37 and 65-67 and col. 9, lines 1-13 in rejecting claim 36. These portions of *Crockett* provide:

> FIG. 2 illustrates a block diagram of the feedback mechanism. The net staffing array(s) 30 and skills availability array(s) 32 (in both cases, one for each call type) are supplied to the scheduler 34, which outputs a "current" schedule 36. This current schedule is then applied to an ACD simulator 38, which is controlled by a call distribution algorithm 40. Using call volume and average handle time forecasts for each call type and the current agent work schedule 36, the ACD simulator simulates call arrivals, call distribution and call handling for each call type over the schedule's time range. As noted above, the simulation preferably makes use of skills-based call routing decisions that may be specific to a particular brand of ACD or to a particular customer's programming of its ACD. If desired, the ACD simulation may be run multiple times with the results then averaged. If the process is not complete, information generated by the simulation is used to refine the net staffing array(s) 30 and the skills availability array(s) 32 between each successive iteration. Each iteration preferably involves a call handling simulation run by the ACD simulator module.
>
> When the "current" schedule provides acceptable call handling performance and acceptable staffing levels, or if some other "termination" criteria is met, the schedule is said to be "optimized" and the routine ends. If desired, individual scheduled agents may then "trade" work and break times to better match preferences (all in a known manner). If this further refinement is desired (and it is optional), the optimized schedule may be further processed, provided the trading is done taking account of skills usage data to maintain schedule integrity.

> The general flow of processing described above applies to all users of the method, as would the existence and use of the net staff and skills usage arrays for each call type. As noted above, the schedule generation program may be different for each user without affecting the overall method. The only requirement is that the scheduling program make appropriate use of the net staff and skill group availability data in evaluating its schedule options. Moreover, the call handling simulation needs to decide what to do when each simulated call arrives, and when each simulated agent becomes free to handle another call. The decision algorithms may be different from one user to another, because they need to simulate the skills-based routing algorithms that will be employed by the user's particular ACD systems. Methods for simulating such routing algorithms and for "plugging in" specific decision modules are straightforward and are outside the scope of the invention being described here.
>
> In particular, ACDs vary in the number and complexity of skills definitions they support for skills-based routing. For example, some support multiple priority levels for skills, some have no priority notion, and some support "primary" and "secondary" skills. In some cases, multi-skilled agents are represented explicitly as having each of the individual skills; in other ACDs each agent has only one skill, so a new skill must be defined for each combination of other skills that an agent might possess. Much of this per-ACD variation can be handled in the ACD-specific routing simulator modules. The method requires only that the skill group divisions in the agent population be understood and available to the method. Means for mapping a specific ACD's skills representation to a suitable internal representation for the method are straightforward and are outside the scope of the invention being described. (Col. 8, line 17 – Col. 9, line 13).

The above cited portion of *Crockett* also fails to teach computing a difference between a quantified attribute of a resource and a quantified attribute desired by a received request to identify at least one of said resources that is suitable for servicing the received request. While the above portion of *Crockett* does mention that ACDs may be used for routing calls to appropriate agents in a call center (skills-based routing), it fails to teach an ACD that performs such routing based on more than mere binary quantification of agent skills (e.g., for each skill under consideration, an agent is designated as either possessing such skill or not). Further, the above portion of *Crockett* fails to teach that an ACD computes a difference between a quantified attribute of a resource and a quantified attribute desired by a received request in order to identify an appropriate resource (agent) to which the received request (call) is to be routed for service.

In view of the above, *Crockett* fails to teach every element of independent claim 36, and therefore does not anticipate claim 36 under 35 U.S.C. § 102(b). Claims 37-40, 42-56,

and 58 each depend either directly or indirectly from independent claim 36 and, thus, inherit all of the limitations of independent claim 36. Thus, *Crockett* does not teach or suggest all claim limitations of claims 37-40, 42-56, and 58. It is respectfully submitted that dependent claims 37-40, 42-56, and 58 are allowable at least because of their dependence from claim 36 for the reasons discussed above. This argument applies to the claims of Groups XVI-XX identified above.

iv. Independent Claim 60

Independent claim 60 recites, in part:

> memory for storing computer executable program code, wherein said computer executable program code includes code executable to quantify at least one attribute of said resources, code executable to quantify at least one attribute desired by said at least one request, and code executable to determine at least one suitable resource for servicing said at least one request based at least in part on said at least one quantified attribute of said resources and said at least one quantified attribute desired by said at least one request

As described above with claims 1 and 19, *Crockett* does not teach "code executable to quantify at least one attribute desired by said at least one request" nor does *Crockett* teach "code executable to determine at least one suitable resource for servicing said at least one request based at least in part on said at least one quantified attribute of said resources and said at least one quantified attribute desired by said at least one request", considering that "quantifying" is defined by the present specification to mean more than mere binary quantification. Thus, *Crockett* fails to teach at least the above elements of claim 60.

Independent claim 60 further recites:

> wherein said code executable to quantify at least one attribute of said resources further includes code executable to quantify "N" number of attributes of said resources and code executable to plot said quantified "N" number of attributes within an N-dimensional space;
>
> wherein said code executable to quantify at least one attribute desired by said at least one request further includes code executable to plot said quantified at least one attribute desired by said at least one request within said N-dimensional space;
>
> wherein said code executable to determine at least one suitable resource includes code executable to calculate the distance between said quantified "N" number of attributes of said resources and said quantified at

least one attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request

Crockett also fails to teach these further elements of claim 60. For instance, *Crockett* does not teach code executable to plot the quantified at least one attribute desired by said at least one request within N-dimensional space. Additionally, *Crockett* does not teach code for determining at least one suitable resource for servicing a received request, where the code for determining includes code executable to calculate the distance between quantified "N" number of attributes of the resources and the quantified at least one attribute desired by the request. Much of *Crockett* addresses scheduling agents of a call center for a given work shift, rather than addressing determining a suitable resource for servicing a received request. The portion of *Crockett* that addresses determining a suitable resource for servicing a received request does not teach doing so by calculating a distance between quantified "N" number of attributes of the agents (resources) and the quantified at least one attribute desired by a received request (received call).

In view of the above, *Crockett* fails to teach every element of independent claim 60, and therefore does not anticipate claim 60 under 35 U.S.C. § 102(b). Claims 62-67, 72-76, and 78 each depend either directly or indirectly from independent claim 60 and, thus, inherit all of the limitations of independent claim 60. Thus, *Crockett* does not teach or suggest all claim limitations of claims 62-67, 72-76, and 78. It is respectfully submitted that dependent claims 62-67, 72-76, and 78 are allowable at least because of their dependence from claim 60 for the reasons discussed above. This argument applies to the claims of Groups XXI-XXIII identified above.

v. Dependent Claims 4-5, 22-23, 46-47, and 66-67

Dependent claims 4-5, 22-23, 46-47, and 66-67 each depend either directly or indirectly from one of independent claims 1, 19, 36, and 60, and thus are believed to be allowable over *Crockett* at least because of their dependencies from their respective independent claims for the reasons discussed above for each independent claim. Additionally, dependent claims 4-5, 22-23, 46-47, and 66-67 recite further elements also not taught by *Crockett*.

Dependent claims 4, 22, 46, and 66 each recite "wherein said resources include resources within a computer system". Further, dependent claims 5, 23, 47, and 67 each recite "wherein said resources include resources selected from the group consisting of: data input resources, data output resources, data storage resources, and data processing resources." *Crockett* fails to teach these elements of these dependent claims. The only resources that *Crockett* addresses are agents in a telephony call center. For instance, *Crockett* fails to teach "determining at least one suitable resource for servicing said at least one request" (Claim 1) wherein the resources are resources within a computer system as in claims 4 and 5.

The Final Office Action asserts at page 6 thereof that the agents of *Crockett* are resources of a computer system. For instance, page 6 of the Final Office Action asserts that "Crockett teaches that the agents include resources selected from the group consisting of skills ... 'agents' reads on the claim 'resources' and 'skills' reads on the claim 'data input resources, data output resources, data storage resources, and data processing resources'". Applicant respectfully submits that reading the agents of *Crockett* as the recited computer system resources of claims 4 and 5 is unreasonable. For instance, *Crockett's* principle goal is scheduling agents within a call center. *Crockett* is clearly directed to staffing of human agents (*see e.g.*, col. 1, line 5 – col. 2, line 63), and does not address determining computer resources for servicing a request, such as those recited by claims 4-5, 22-23, 46-47, and 66-67. Thus, Applicant respectfully submits that *Crockett* fails to teach every element of claims 4-5, 22-23, 46-47, and 66-67, and therefore does not anticipate those claims under 35 U.S.C. § 102(b). This argument applies to the claims of Groups II, X, XVII, and XXII identified above.

vi. Dependent Claims 8-9, 26-27, and 49-50

Dependent claims 8-9, 26-27, and 49-50 each depend either directly or indirectly from one of independent claims 1, 19, and 36, and thus are believed to be allowable over *Crockett* at least because of their dependencies from their respective independent claims for the reasons discussed above for each independent claim. Additionally, dependent claims 8-9, 26-27, and 49-50 recite further elements also not taught by *Crockett*. Specifically, each of these dependent claims recite plotting that is not taught by *Crockett*.

Dependent claim 8 recites "plotting said quantified "N" number of attributes within an N-dimensional space." Dependent claim 9 further recites "plotting said quantified at least one attribute desired by said at least one request within said N-dimensional space."

Dependent claim 26 recites "plotting said quantified "N" number of functional attributes within an N-dimensional space." Dependent claim 27 further recites "plotting said quantified at least one functional attribute desired by said at least one request within said N-dimensional space."

Dependent claim 49 recites "means for plotting said quantified "N" number of attributes within an N-dimensional space." Dependent claim 50 further recites "means for plotting said quantified at least one attribute desired by said at least one request within said N-dimensional space."

Crockett fails to teach the above recited plotting elements of these dependent claims, and therefore does not anticipate those claims under 35 U.S.C. § 102(b). This argument applies to the claims of Groups III, XI, and XVIII identified above.

vii. Dependent Claims 10, 28, and 51

Dependent claims 10, 28, and 51 each depend either directly or indirectly from one of independent claims 1, 19, and 36, and thus are believed to be allowable over *Crockett* at least because of their dependencies from their respective independent claims for the reasons discussed above for each independent claim. Additionally, dependent claims 10, 28, and 51 recite further elements also not taught by *Crockett*. Specifically, each of these dependent claims recite calculating a distance that is not taught by *Crockett*.

Dependent claim 10 recites "calculating the distance between said quantified "N" number of attributes of said resources and said quantified at least one attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request." Dependent claim 28 recites "calculating the distance between said quantified "N" number of functional attributes of said resources and said quantified at least one functional attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request." Dependent claim 51 recites "means for calculating the distance between said quantified "N" number of attributes of said resources and said

quantified at least one attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request."

Crockett fails to teach the above calculating elements of these dependent claims, and therefore does not anticipate those claims under 35 U.S.C. § 102(b). This argument applies to the claims of Groups IV, XII, and XIX identified above.

viii. Dependent Claims 17, 58, and 78

Dependent claims 17, 58, and 78 each depend either directly or indirectly from one of independent claims 1, 36, and 60, and thus are believed to be allowable over *Crockett* at least because of their dependencies from their respective independent claims for the reasons discussed above for each independent claim. Additionally, dependent claims 17, 58, and 78 recite further elements also not taught by *Crockett*. Specifically, each of these dependent claims recite grading along a scale an attribute desired by a received request, which is not taught by *Crockett*.

Dependent claim 17 depends from claim 1 and further recites "wherein said quantifying at least one attribute desired by said at least one request further includes: grading said at least one attribute of each of said resources along a scale". Dependent claim 58 depends from claim 36 and further recites "wherein said means for gradationally quantifying at least one attribute desired by said at least one request further includes: means for grading said at least one attribute of each of said resources along a scale". Dependent claim 78 depends from claim 60 and further recites "wherein said code executable to quantify at least one attribute desired by said at least one request further includes: code executable to grade said at least one attribute of each of said resources along a scale".

Crockett fails to teach the above elements of these dependent claims, and therefore does not anticipate those claims under 35 U.S.C. § 102(b). This argument applies to the claims of Groups V, XX, and XXIII identified above.

ix. Dependent Claim 80

Dependent claim 80 depends from independent claim 1 and is thus believed to be allowable over *Crockett* at least because of its dependency from claim 1 for the reasons

discussed above. Additionally, dependent claim 80 recites further elements also not taught by *Crockett*. Specifically, dependent claim 80 recites "wherein said quantifying at least one attribute desired by said at least one request comprises utilizing at least one selected from the group consisting of: demographics information, a profile for a requestor, and interactive voice response (IVR) interaction with the requestor." As discussed above with claim 1, *Crockett* fails to teach quantifying an attribute desired by a request, as "quantifying" is defined to mean beyond mere binary quantification. Further, *Crockett* fails to teach utilizing demographics information, a profile, or IVR interaction for quantifying an attribute desired by a request.

In view of the above, *Crockett* fails to teach the above elements of dependent claim 80, and therefore does not anticipate claim 80 under 35 U.S.C. § 102(b). This argument applies to the claim of Group VI identified above.

x. Dependent Claims 81 and 84

Dependent claims 81 and 84 each depend either directly or indirectly from one of independent claims 1 and 19, and are thus believed to be allowable over *Crockett* at least because of their dependencies from their respective independent claims for the reasons discussed above. Additionally, dependent claims 81 and 84 recite further elements also not taught by *Crockett*.

Specifically, dependent claim 81 recites "wherein said receiving at least one request for at least one of said resources comprises: receiving a target value of said at least one attribute desired by said at least one request and a close_match modifier that indicates the closeness of said quantified at least one attribute of said resources to the target value that is suitable for servicing said at least one request." Dependent claim 84 recites "wherein said receiving at least one request for said at least one functional attribute comprises: receiving a target value of said at least one functional attribute desired by said at least one request and a close_match modifier that indicates the closeness of said quantified at least one functional attribute of said resources to the target value that is suitable for servicing said at least one request." *Crockett* simply fails to teach receiving a target value of a desired attribute and a close_match modifier indicating the closeness of a resource attribute that is suitable for servicing a received request.

In view of the above, *Crockett* fails to teach the above elements of dependent claims 81 and 84, and therefore does not anticipate those claims under 35 U.S.C. § 102(b). This argument applies to the claims of Groups VII and XIV identified above.

xi. Dependent Claims 82 and 83

Dependent claims 82 and 83 each depend either directly or indirectly from one of independent claims 1 and 19, and are thus believed to be allowable over *Crockett* at least because of their dependencies from their respective independent claims for the reasons discussed above. Additionally, dependent claims 82 and 83 recite further elements also not taught by *Crockett*.

Specifically, dependent claim 82 recites "wherein said quantifying at least one attribute desired by said at least one request comprises using information in a profile for a requestor of said at least one of said resources for performing said quantifying for a request from said requestor." Dependent claim 83 recites "wherein said quantifying said at least one functional attribute desired by said at least one request comprises using information in a profile for a requestor of said at least one functional attribute for performing said quantifying for a request from said requestor." *Crockett* simply fails to teach using information in a profile for a requestor for quantifying a request received from the requestor.

In view of the above, *Crockett* fails to teach the above elements of dependent claims 82 and 83, and therefore does not anticipate those claims under 35 U.S.C. § 102(b). This argument applies to the claims of Groups VIII and XIII identified above.

xii. Dependent Claim 85

Dependent claim 85 depends from independent claim 19 and is thus believed to be allowable over *Crockett* at least because of its dependency from claim 19 for the reasons discussed above. Additionally, dependent claim 85 recites further elements also not taught by *Crockett*. Specifically, dependent claim 85 recites "wherein said receiving at least one request for said at least one functional attribute comprises: receiving a close_match modifier that indicates how close said quantified at least one functional attribute of said resources has to be to said quantified at least one functional attribute desired by said at least one request in order to be suitable for servicing said at least one request." *Crockett* simply fails to teach

receiving a close_match modifier indicating the closeness of a resource attribute that is suitable for servicing a received request.

In view of the above, *Crockett* fails to teach the above elements of dependent claim 85, and therefore does not anticipate claim 85 under 35 U.S.C. § 102(b). This argument applies to the claim of Group XV identified above.

B. Rejections Under 35 U.S.C. § 103(a) over *Crockett* in view of *Raman*

Claims 16, 18, 33, 35, 41, 57, 59, 77, and 79 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Crockett* in view of *Raman*. To establish a prima facie case of obviousness, three basic criteria must be met. *See* M.P.E.P. § 2143. First, there must be some suggestion or motivation, either in the applied references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the applied references must teach or suggest all the claim limitations. Without conceding the second criteria, Applicant respectfully asserts that the rejection does not satisfy the first and third criteria for claims 16, 18, 33, 35, 41, 57, 59, 77, and 79, as discussed more fully below.

i. Claims 16, 33, 35, 57, and 77

Claims 16, 33, 35, 57, and 77 each depend either directly or indirectly from one of independent claims 1, 19, 36, and 60. As discussed above, claims 1, 19, 36, and 60 are believed to be allowable over *Crockett*. Further, *Raman* is not relied upon as teaching the above elements identified by Applicant as missing from *Crockett*. Thus, claims 16, 33, 35, 57, and 77 are believed to be allowable at least because of their dependencies from their respective independent claims. This argument applies to the claims of Group XXIV identified above.

ii. Claims 18, 59, and 79

Claims 18, 59, and 79 are not obvious under 35 U.S.C. § 103(a) over *Crockett* in view of *Raman*. First, each of claims 18, 59, and 79 depends either directly or indirectly from one of independent claims 1, 36, and 60. As discussed above, claims 1, 36, and 60 are believed to be allowable over *Crockett*. Further, *Raman* is not relied upon as teaching the above

elements identified by Applicant as missing from *Crockett*. Thus, claims 18, 59, and 79 are believed to be allowable at least because of their dependencies from their respective independent claims.

Further, the combination of *Crockett* and *Raman* fails to render claims 18, 59, and 79 obvious because the applied combination fails to teach or suggest all elements of those claims and there is no motivation to combine the references in the manner suggested by the Examiner.

Combination fails to teach or suggest all elements

Claim 18 depends from claim 17, which recites "wherein said quantifying at least one attribute desired by said at least one request further includes: grading said at least one attribute of each of said resources along a scale." Claim 18 further recites that the scale along which the at least one attribute desired by the at least one request is a scale of 0 to 100.

Claim 59 depends from claim 58, which recites "wherein said means for gradationally quantifying at least one attribute desired by said at least one request further includes: means for grading said at least one attribute of each of said resources along a scale." Claim 59 further recites that the scale along which the at least one attribute desired by the at least one request is a scale of 0 to 100.

Claim 79 depends from claim 78, which recites "wherein said code executable to quantify at least one attribute desired by said at least one request further includes: code executable to grade said at least one attribute of each of said resources along a scale." Claim 79 further recites that the scale along which the at least one attribute desired by the at least one request is a scale of 0 to 100.

The Final Office Action concedes that *Crockett* fails to teach such a scale of 0 to 100. However, the Final Office Action asserts that *Raman* teaches this scale, citing figs. 5a and 5b, col. 8, lines 57-67 and col. 9, lines 1-41 of *Raman*. *See* page 12 of the Final Office Action. While *Raman* mentions a scale of 0 to 100, such scale is not used for grading a resource attribute that is desired by a received request, as in claim 18. *Raman* "pertains to a new method for converting works in digitized form to an audio output." Col. 3, lines 44-46 of *Raman*. *Raman* teaches a technique that "utilizes ... embedded formatting information to

create analogical markings in the audio domain." Col. 4, lines 12-14. Thus, formatting commands may be inserted in the text stream of a digitized work to detail how various characteristics of synthesized voice corresponding to such text stream are to vary, such as pitch, smoothness, breathiness, etc. of the resulting synthesized voice. The relied upon portion of *Raman* addresses using values within a scale of 0 to 100 for certain ones of those voice characteristics. Again, the values may be inserted as a formatting command in the text stream of a digitized work to control the resulting synthesized voice that speaks such text stream.

Because the scale of *Raman* is not used for grading a resource attribute that is desired by a received request, but is instead used for controlling voice synthesis, the applied combination of *Crockett* and *Raman* fails to teach or suggest this element of claims 18, 59, and 79. As such, these claims are not obvious under 35 U.S.C. § 103(a) over *Crockett* in view of *Raman*.

No motivation to combine the applied references

Further, no motivation exists for combining the teaching of a scale of *Raman* with the teaching of *Crockett* in the manner suggested by the Final Office Action. The Final Office Action asserts that the "motivation for the modification is to have doing so in order to provide the quantification of the capability of the attributes." Page 12 of the Final Office Action. This motivation is nonsensical. At best this is a circular statement that merely asserts that it would be obvious to combine the references because it would be obvious to achieve the result. This no real statement of any reason why one of skill in the art would be motivated to combine the technique of performing voice synthesis detailed in *Raman* with the system of *Crockett*, which addresses scheduling work shifts of agents within a telephony call center.

The above arguments apply to the claims of Group XXV identified above.

C. Rejections Under 35 U.S.C. § 103(a) over *Crockett* in view of *McPartlan*

Claims 41 and 61 each depend either directly or indirectly from one of independent claims 36 and 60. As discussed above, claims 36 and 60 are believed to be allowable over *Crockett*. Further, *McPartlan* is not relied upon as teaching the above elements identified by Applicant as missing from *Crockett*. Thus, claims 41 and 61 are believed to be allowable at

least because of their dependencies from their respective independent claims. This argument applies to the claims of Group XXVI identified above.

IX. CLAIMS INVOLVED IN THE APPEAL

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A do not include the amendment(s) filed by Applicant in the Amendment After Final Rejection on June 16, 2004.

The required fee for this response is enclosed. If any additional fee is due, please charge Deposit Account No. 06-2380, under Order No. 47524/P102US/09901295 from which the undersigned is authorized to draw.

Dated: August 24, 2004

Respectfully submitted,

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/689,481

1. A method of managing resources, said method comprising the steps of:
providing a finite number of resources for servicing requests;
quantifying at least one attribute of said resources;
receiving at least one request for at least one of said resources;
quantifying at least one attribute desired by said at least one request; and
based at least in part on said quantifying steps, determining at least one suitable resource for servicing said at least one request.

2. The method of claim 1 wherein said resources include agents within a telephony call center.

3. The method of claim 1 wherein said at least one request includes a request from a caller to a telephony center.

4. The method of claim 1 wherein said resources include resources within a computer system.

5. The method of claim 4 wherein said resources include resources selected from the group consisting of: data input resources, data output resources, data storage resources, and data processing resources.

6. The method of claim 1 wherein said step of quantifying at least one attribute of said resources further includes:
quantifying two or more attributes of said resources.

7. The method of claim 1 wherein said step of quantifying at least one attribute of said resources further includes:
quantifying "N" number of attributes of said resources.

8. The method of claim 7 further including the step of:
plotting said quantified "N" number of attributes within an N-dimensional space.

9. The method of claim 8 further including the step of:

plotting said quantified at least one attribute desired by said at least one request within said N-dimensional space.

10. The method of claim 9 wherein said determining step includes:

calculating the distance between said quantified "N" number of attributes of said resources and said quantified at least one attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request.

11. The method of claim 1 wherein said determining step includes:

determining said at least one suitable resource from resources then available to immediately service said at least one request.

12. The method of claim 1 wherein said determining step includes:

determining said at least one suitable resource from all of said resources.

13. The method of claim 1 wherein said at least one attribute includes at least one skill possessed by said resources.

14. The method of claim 1 wherein said at least one attribute includes at least one functional capability possessed by said resources.

15. The method of claim 1 wherein said quantifying at least one attribute of said resources further includes:

grading said at least one attribute of each of said resources along a scale.

16. The method of claim 15 wherein said scale is of 0 to 100.

17. The method of claim 1 wherein said quantifying at least one attribute desired by said at least one request further includes:

grading said at least one attribute of each of said resources along a scale.

18. The method of claim 17 wherein said scale is of 0 to 100.

19. A method of allocating resources selected from a finite number of resources for servicing requests, said resources having at least one measurable functional attribute, said method comprising the steps of:

quantifying at least one functional attribute of said resources, wherein said quantifying said at least one functional attribute of said resources includes grading said at least one functional attribute of each of said resources along a scale;

receiving at least one request for said at least one functional attribute;

quantifying said at least one functional attribute desired by said at least one request, wherein said quantifying said at least one functional attribute desired by said at least one request includes grading said at least one functional attribute of each of said resources along a scale; and

based at least in part on said quantifying steps, determining at least one suitable resource for servicing said at least one request.

20. The method of claim 19 wherein said resources include agents within a telephony call center.

21. The method of claim 19 wherein said at least one request includes a request from a caller to a telephony center.

22. The method of claim 19 wherein said resources include resources within a computer system.

23. The method of claim 22 wherein said resources include resources selected from the group consisting of: data input resources, data output resources, data storage resources, and data processing resources.

24. The method of claim 19 wherein said step of quantifying at least one functional attribute of said resources further includes:

quantifying two or more functional attributes of said resources.

25. The method of claim 19 wherein said step of quantifying at least one functional attribute of said resources further includes:

quantifying "N" number of functional attributes of said resources.

26. The method of claim 25 further including the step of:

plotting said quantified "N" number of functional attributes within an N-dimensional space.

27. The method of claim 26 further including the step of:

plotting said quantified at least one functional attribute desired by said at least one request within said N-dimensional space.

28. The method of claim 27 wherein said determining step includes:

calculating the distance between said quantified "N" number of functional attributes of said resources and said quantified at least one functional attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request.

29. The method of claim 19 wherein said determining step includes:

determining said at least one suitable resource from resources then available to immediately service said at least one request.

30. The method of claim 19 wherein said determining step includes:

determining said at least one suitable resource from all of said resources.

31. The method of claim 19 wherein said at least one functional attribute includes at least one skill possessed by said resources.

32. Canceled

33. The method of claim 19 wherein said scale is of 0 to 100.

34. Canceled

35. The method of claim 19 wherein said scale is of 0 to 100.

36. A resource management system for managing a finite number of resources for servicing requests, said resource management system comprising:

means for gradationally quantifying at least one attribute of said resources;

means for receiving at least one request for at least one of said resources;

means for gradationally quantifying at least one attribute desired by said at least one request; and

means for determining at least one suitable resource for servicing said at least one request based at least in part on said at least one quantified attribute of said resources and said at least one quantified attribute desired by said at least one request, wherein said means for determining computes a difference between the quantified at least one attribute of said resources and the quantified at least one attribute desired by said at least one request to identify at least one of said resources that is suitable for servicing said at least one request.

37. The system of claim 36 wherein said means for gradationally quantifying at least one attribute of said resources includes a computer processor executing computer software code.

38. The system of claim 36 wherein said means for gradationally quantifying at least one attribute desired by said at least one request includes a computer processor executing computer software code.

39. The system of claim 36 wherein said determining means includes a computer processor executing computer software code.

40. The system of claim 36 wherein said receiving means includes a connection to a network.

41. The system of claim 40 wherein said network is selected from the group consisting of:

public switched telephony network (PSTN), local area network (LAN), wide area network (WAN), the Internet, an Intranet, or any combination thereof.

42. The system of claim 36 wherein said receiving means includes a switching system.

43. The system of claim 42 wherein said switching system includes an ACD/PBX.

44. The system of claim 36 wherein said resources include agents within a telephony call center.

45. The system of claim 36 wherein said at least one request includes a request from a caller to a telephony center.

46. The system of claim 36 wherein said resources include resources within a computer system.

47. The system of claim 46 wherein said resources include resources selected from the group consisting of: data input resources, data output resources, data storage resources, and data processing resources.

48. The system of claim 36 wherein said means for gradationally quantifying at least one attribute of said resources further includes:

means for gradationally quantifying "N" number of attributes of said resources.

49. The system of claim 48 wherein said means for gradationally quantifying at least one attribute of said resources further includes:

means for plotting said quantified "N" number of attributes within an N-dimensional space.

50. The system of claim 49 wherein said means for gradationally quantifying at least one attribute desired by said at least one request further includes:

means for plotting said quantified at least one attribute desired by said at least one request within said N-dimensional space.

51. The system of claim 50 wherein said determining means includes:

means for calculating the distance between said quantified "N" number of attributes of said resources and said quantified at least one attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request.

52. The system of claim 36 wherein said determining means includes:

means for determining said at least one suitable resource from resources then available to immediately service said at least one request.

53. The system of claim 36 wherein said determining means includes:
means for determining said at least one suitable resource from all of said resources.

54. The system of claim 36 wherein said at least one attribute includes at least one skill possessed by said resources.

55. The system of claim 36 wherein said at least one attribute includes at least one functional capability possessed by said resources.

56. The system of claim 36 wherein said means for gradationally quantifying at least one attribute of said resources further includes:
means for grading said at least one attribute of each of said resources along a scale.

57. The system of claim 56 wherein said scale is of 0 to 100.

58. The system of claim 36 wherein said means for gradationally quantifying at least one attribute desired by said at least one request further includes:
means for grading said at least one attribute of each of said resources along a scale.

59. The system of claim 58 wherein said scale is of 0 to 100.

60. A resource management system for managing a finite number of resources for servicing requests, said system comprising:

connection to a network capable of receiving at least one request for at least one of said resources;

memory for storing computer executable program code, wherein said computer executable program code includes code executable to quantify at least one attribute of said resources, code executable to quantify at least one attribute desired by said at least one request, and code executable to determine at least one suitable resource for servicing said at least one request based at least in part on said at least one quantified attribute of said resources and said at least one quantified attribute desired by said at least one request;

wherein said code executable to quantify at least one attribute of said resources further includes code executable to quantify "N" number of attributes of said resources and code executable to plot said quantified "N" number of attributes within an N-dimensional space;

wherein said code executable to quantify at least one attribute desired by said at least one request further includes code executable to plot said quantified at least one attribute desired by said at least one request within said N-dimensional space;

wherein said code executable to determine at least one suitable resource includes code executable to calculate the distance between said quantified "N" number of attributes of said resources and said quantified at least one attribute desired by said at least one request to determine at least one suitable resource for servicing said at least one request; and

processor for executing said computer executable program code.

61. The system of claim 60 wherein said network is selected from the group consisting of:

public switched telephony network (PSTN), local area network (LAN), wide area network (WAN), the Internet, an Intranet, or any combination thereof.

62. The system of claim 60 wherein said connection to a network includes a switching system.

63. The system of claim 62 wherein said switching system includes an ACD/PBX.

64. The system of claim 60 wherein said resources include agents within a telephony call center.

65. The system of claim 60 wherein said at least one request includes a request from a caller to a telephony center.

66. The system of claim 60 wherein said resources include resources within a computer system.

67. The system of claim 66 wherein said resources include resources selected from the group consisting of: data input resources, data output resources, data storage resources, and data processing resources.

68. Canceled

69. Canceled

70. Canceled

71. Canceled

72. The system of claim 60 wherein said code executable to determine at least one suitable resource includes:

code executable to determine said at least one suitable resource from resources then available to immediately service said at least one request.

73. The system of claim 60 wherein said code executable to determine at least one suitable resource includes:

code executable to determine said at least one suitable resource from all of said resources.

74. The system of claim 60 wherein said at least one attribute includes at least one skill possessed by said resources.

75. The system of claim 60 wherein said at least one attribute includes at least one functional capability possessed by said resources.

76. The system of claim 60 wherein said code executable to quantify at least one attribute of said resources further includes:

code executable to grade said at least one attribute of each of said resources along a scale.

77. The system of claim 76 wherein said scale is of 0 to 100.

78. The system of claim 60 wherein said code executable to quantify at least one attribute desired by said at least one request further includes:

code executable to grade said at least one attribute of each of said resources along a scale.

79. The system of claim 78 wherein said scale is of 0 to 100.

80. The method of claim 1 wherein said quantifying at least one attribute desired by said at least one request comprises utilizing at least one selected from the group consisting of:

demographics information, a profile for a requestor, and interactive voice response (IVR) interaction with the requestor.

81. The method of claim 1 wherein said receiving at least one request for at least one of said resources comprises:

receiving a target value of said at least one attribute desired by said at least one request and a close_match modifier that indicates the closeness of said quantified at least one attribute of said resources to the target value that is suitable for servicing said at least one request.

82. The method of claim 1 wherein said quantifying at least one attribute desired by said at least one request comprises using information in a profile for a requestor of said at least one of said resources for performing said quantifying for a request from said requestor.

83. The method of claim 19 wherein said quantifying said at least one functional attribute desired by said at least one request comprises using information in a profile for a requestor of said at least one functional attribute for performing said quantifying for a request from said requestor.

84. The method of claim 19 wherein said receiving at least one request for said at least one functional attribute comprises:

receiving a target value of said at least one functional attribute desired by said at least one request and a close_match modifier that indicates the closeness of said quantified at least one functional attribute of said resources to the target value that is suitable for servicing said at least one request.

85. The method of claim 19 further comprising wherein said receiving at least one request for said at least one functional attribute comprises:

receiving a close_match modifier that indicates how close said quantified at least one functional attribute of said resources has to be to said quantified at least one functional attribute desired by said at least one request in order to be suitable for servicing said at least one request.